

FISHKOVA, L. M.

USSR/Geophysics - Night Sky

21 Feb 50

"Infrared Radiation of the Northern Lights," S. F. Rodionov, L. M. Fishkova, Phys Inst, Leningrad State U imeni A. A. Zhdanov

"Dok Ak Nauk SSSR" Vol LXX, No 6, pp 1001-1003

Gives results of measurements made in Mar 49 of intensity of infrared and green radiation for northern lights of various forms (diffuse, draperies, arcs, etc.) and for ordinary night-sky luminescence. Measurements revealed radiation of northern lights in the region 9,000-10,800 Å was 20-30 times intensity of strong green line (5,577 Å). Comparison with observations made on Mt El'brus in summer 1948 showed intensity of night-sky luminescence at northern latitude (exact latitude not given) is slightly greater than at Mt El'brus. Submitted 26 Nov 49 by Acad A. A. Lebedev.

PA 165T24

FISHKOVA, L. M.

"Distribution of Brightness of Night-Sky Infrared Radiation over the Celestial Arch," Dokl. AN SSSR, 73, No.1, 1950

CA

FISHKOVA, L.M.

3

Temperature dependence of the intensity of the Raman spectrum lines of some liquids. L. M. Fishkova (Leningrad State Univ.). *Doklady Akad. Nauk S.S.S.R.* 73, 521 (1980).—Intensities I of the Stokes component of 4 Raman lines of liquid CCl_4 were found to decrease with rising temp. between -15 and $+73^\circ$ at unequal rates; the ratios of I at these 2 extreme temps. were, for the Raman frequencies 760-791, 480, 313, and 217 cm^{-1} , resp., 3.10, 2.56, 2.36, and 2.16. For C_6H_6 , between 6 and 70° , for 3000 and 992 cm^{-1} , resp., 1.47 and 1.58. For $\text{C}_6\text{H}_5\text{Cl}$, I of the Stokes components of the 2 lines 3066 and 1004 cm^{-1} remained practically unchanged between 22 and 70° . The intensity of the undisplaced line increases very nearly proportionally to the abs. temp., e.g., in C_6H_6 , between 202° K. and 343° K., the ratio of I is 1.11. The change of d , in the temp. range investigated is much too small to account for the sp. differences in the variation of I of the Stokes components, and the role of the change in n is negligible. In the light of the sp. differences observed for different frequencies and for different substances, the existing theory of the intensity of the Stokes and anti-Stokes components of Raman lines appears inadequate. The anti-Stokes components could not be measured. N. Thom

FISHKOVA, L.M.

USSR/Geophysics

Card 1/1 : Pub. 22 - 19/44

Authors : Rodionov, S. F.; Pavlova, E. N.; Sholokhova, E. D.; and Fishkova, L. M.

Title : Yearly variations of infrared radiation of the night sky

Periodical : Dok. AN SSSR 98/6, 957-960, October 21, 1954

Abstract : The results of experiments with infrared radiation of the night sky, conducted on Mount Elbrus during 1948-1953, are presented. Four Russian references (1948-1951). Graphs.

Institution : Leningrad State University im. A. A. Zhdanov; Elbrus Complex Scientific Expedition of the Acad. of Scs. of the USSR

Presented by: Academician V. G. Fesenkov, April 19, 1954

FISHKOVA, L.M.; CHKHAIDZE, Sh.M.

~~Unusual~~ Anomalous sunrises and sunsets in August and September, 1953.
Astron. tsir. no. 146:18-19 F '54. (MLRA 7:6)

1. Abastumanskaya astrofizicheskaya observatoriya, Gora. Kanobili.
(Sun--Rising and setting)

FISHKOVA, L. M.

Seasonal Variations of the Intensity of Night Sky Luminescence.
Akademiya Nauk Gruzinskoy SSR. Soobshcheniya, 1955, v. 16, no. 9, p 681-686.

FISHKOVA, L.M.

Variations of intensity of nocturnal sky luminosity in the
near infrared region. Biul. Abast. astrofiz. obser. no.19:
3-23 '55. (MLRA 9:12)

(Atmosphere, Upper) (Night sky) (Spectrum, Infrared)

SOV/169-59-4-4209

Translation from: Referativnyy zhurnal, Geofizika, 1959, Nr 4, p 139 (USSR)

AUTHORS: Megrelishvili, T.G., Fishkova, L.M.

TITLE: On the Investigation of the Upper Atmosphere Glow

PERIODICAL: Mezhdunar. geofiz. god. Inform. byul., 1958, Nr 5, pp 43 - 44

ABSTRACT: The authors report on electrophotometric and spectrographic observations of the glow of the night and twilight sky, which were performed by the Abstumanskaya astrofizicheskaya observatoriya AN GruzSSR (Abastumani Astrophysical Observatory of the AS GruzSSR) in accordance with the IGY program. There are brief descriptions of the devices with which the aforementioned investigations were performed. The basic purpose of the spectrographic observations during the IGY was the discovery of lines in the night sky spectrum, belonging to the spectra of the aurora polaris occurring in low latitudes during intense geomagnetic disturbances, especially in years with maximum solar activity.

Card 1/1

L.T.



SOV/58-59-9-21566

Translation from: Referativnyy Zhurnal Fizika, 1959, Nr 9, pp 303 - 304 (USSR)

AUTHORS: Dolidze, M.V., Fishkova, L.M.

TITLE: An Auxiliary Device for the "MF-4" Automatic Recording Microphotometer

PERIODICAL: Abastumanis astropizikuri observatoria, Biuleteni, Byul. Abastumansk. astrofiz. observ., 1958, Nr 22, pp 117 - 124 (English résumé)

ABSTRACT: The attachment is a combination of a photoelectric-optical converter for transforming optical blackening densities into intensity and a photoelectric planimeter. A uniformly illuminated slit of the "UF-1" type is projected onto a spherical mirror at whose focal point photocell PC_2 is located. The mirror of an auxiliary galvanometer G_2 , attached to photocell PC_1 of the microphotometer, serves as one of the elements of the projecting optical system. The galvanometer of the microphotometer is used to record the current of PC_2 . Wedge-shaped diaphragms D, having the form of the characteristic curves of the given photographic material for certain wavelengths, are placed in the plane of the spherical mirror. As the current of PC_1 varies, galvanometer G_2 deflects the image of the slit onto D, which is so set that its narrowest opening corresponds to

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SOV/58-59-9-21566

An Auxiliary Device for the "MF-4" Automatic Recording Microphotometer

the background of the plate. The necessary angle of deflection of the image of the slit is achieved by varying the incandescence of the tube and the width of the slit in the "MF-4". In order to measure the areas, a collimator, consisting of an objective and a uniformly illuminated round diaphragm, is placed on the axis of the ray reflected from the mirror of G_2 . Diaphragm D is taken down, and in its stead a diaphragm is placed which has the form of the area being measured. Readings of the areas are taken from the visual dials of the "MF-4". The attachment is used in processing stellar spectra.

Yu.M. Kutev

Card 2/2

FISHKOVA, L.M.; MARKOVA, G.V.

Electrophotometric observations of low-latitude aurora borealis
of February 11-12, 1958, in Abastumani. Astron. tsir. no.191:
28-29 My '58. (MIRA 11:9)

1. Abastumanskaya astrofizicheskaya observatoriya AN GruzSSR.
(Auroras)

FISHKOVA, L.; MARKOVA, G.

The H line in the luminescence spectrum of the night sky.
Astron. tsir. no.196:8-9 0 '58. (MIRA 12:12)

1.Abastumanskaya astrofizicheskaya observatoriya AN Gruzinskoy SSR.
(Night sky--Spectra)

FISHKOVA, L.M.

Checking the transparence constancy of night sky luminescence.
Meshdunar.geofiz.god no.7:68-69 '59. (MIRA 13:2)
(Night sky)

88827

S/035/61/000/002/012/016
A001/A001

3.1806 (1041, 1062, 1168)

Translation from: Referativnyy zhurnal, Astronomiya i Geodeziya, 1961, No. 2,
p. 57, # 2A470

AUTHORS: Fishkova, L.M., Markova, G.V.

TITLE: Some Results of Electrophotometrical Observations of Emissions of
OI, Na, OH and Continuous Background in the Night Sky Glow

PERIODICAL: "Byul. Abastumansk. astrofiz. observ.", 1959, No. 24, pp. 161-173
(Engl. summary)

TEXT: The authors determined absolute intensities of emissions $\lambda\lambda$ 5577, 6300, 5890 and continuous background at $\lambda\lambda$ 5290, 5730, 6060, and also summary intensities of infrared bands OH (8,4), (3,0), (9,5) and (4,1) from observational data for the period from July 1957 to June 1958. They present the curves of daily and seasonal variations in intensity of these emissions. They note that daily variations of OH intensity have a minimum at mid-night and maximum between 2 and 4^h of local time, the maximum of λ 5577 leads the maximum of OH by 2-3 hours. Daily variations in intensities of bands OH and λ 5577 have always reverse course.

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88827

S/035/61/000/002/012/016
A001/A001

lx

Some Results of Electrophotometrical Observations of Emissions of OI, Na, OH and Continuous Background in the Night Sky Glow

The mean intensity of continuous background at $\lambda 5290$ in the polar zone ($\varphi = 51^\circ$) equals 2.5 R/A after excluding stellar and zodiacal components which are equal to 0.4 R/A. Three types of intensity variations of background at $\lambda 5290$ are noted: 1) background variation does not correlate with any emission; 2) background variation correlates with $\lambda 5577$; 3) background variation correlates with OH, mainly at high OH intensities. Seasonal variations of background intensity have two maxima: major one in January, and minor one in July. It is assumed that continuous background consists of three components of the proper atmosphere emission in continuous spectrum; it does not correlate with emissions in bands and lines and produces January maximum of forbidden molecular bands of scattered Sun's light. There are 18 references.

N. Shefov

Translator's note: This is the full translation of the original Russian abstract.

Card 2/2

3.5/20

28839 S/169/61/000/004/020/026
A005/A130

AUTHORS: Fishkova, L.M.; Markova, G.V.

TITLE: Some results of electrophotometric and spectrographic observations of night-sky glow at Abastumani

PERIODICAL: Referativnyy zhurnal. Geofizika, no. 4, 1961, 40, abstract 4 G 298. [V sb.: Spektr., elektrofotometr. i radiolokats. issled. polyarn. siyaniy i svecheniya nochnogo neba, no. 2 - 3. Moscow, AN SSSR, 1960, 49 - 56 (English summary)]

TEXT: The authors give a brief account of the main results of electrophotometric observations of diurnal and seasonal variations in the intensities of the λ 5,577 [01], λ 6,300 - 6,364 [01] and Na night-sky emissions, the continuous emission and the OH bands in the range $\Delta\lambda$ 9,000 - 10,550 Å; the observations were carried out by the Abastumanskaya Observatoriya AN Gruzinskoy SSR (Abastumani Observatory of the Academy of Sciences of the Gruzinskaya SSR) during the IGY (see abstract 4 G 297). In addition, data are given on variations in the intensity of H α emission in the glow spectrum of the night sky according to spectrographic observations conducted during the same time. A record is presented of

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Some results of electrophotometric and....

S/169/61/000/004/020/026
A005/A130

the night-sky glow spectrum in the λ 3,000 - 4,000 Å range showing bands of the O_2 Herzberg system, the λ 3,914 N_2 band and three unidentified bands in the 3,700 - 3,800 Å range.

Author's summary

[Abstracter's note: Complete translation]

X

Card 2/2

87360

S/035/60/000/012/018/019

A001/A001

9,984/

Translation from: Referativnyy zhurnal, Astronomiya i Geodeziya, 1960, No. 12, p. 61, # 12345

AUTHORS: Fishkova, L. M., Markova, G. V.

TITLE: On Variations in Intensity of the $H\alpha$ Line in the Nocturnal Airglow Spectrum

PERIODICAL: Astron. tsirkulyar, 1960, yanv. 30, No. 208, pp. 14-15

TEXT: Observations of emission $H\alpha$ $\lambda 6562$ in the spectrum of nocturnal airglow were continued in 1959. The following preliminary results have been obtained: the intensity of $H\alpha$ in direction $z = 67^\circ N$ attained the maximum magnitude in June-August, both in 1958 and 1959; the intensity of $H\alpha$ varies from night to night analogously to variations of OH band intensities, but the amplitude of variations is twice as small as the amplitude of OH band variation; the ratio of intensity in direction $z = 70^\circ$ to that in direction $z = 20^\circ$ amounts to 1.73 ± 0.14 for $H\alpha$, and to 2.50 ± 0.40 for OH. Attempts are made to explain the peculiarities of variations of the $H\alpha$ intensity. There are 5 references. N. P. Kukarkina

Translator's note: This is the full translation of the original Russian abstract.

Card 1/1

84683

S/020/60/134/004/007/023
B019/B067

3,1800 (1041,1062,1168)

AUTHORS: Fishkova, L. M. and Markova, G. V.

TITLE: On Intensity Variations of the 6526 HI Line in the Night
Airglow Spectrum

PERIODICAL: Doklady Akademii nauk SSSR, 1960, Vol. 134, No. 4,
pp. 799 - 801

TEXT: From 1958 to 1959 systematic observations of the night airglow spectrum in the region of from 5400 to 6700 Å were made at the observatory mentioned under the Association. The pictures were taken on a panchromatic film by means of a diffraction spectrograph of the type СП-48 (SP-48) with a power of 1 : 0.8, a dispersion of approximately 85 Å/mm, and an aperture of 3.5 Å. 40 spectra were obtained during moonless nights on the almucantar at a zenith distance of 67° N. Fig. 1 graphically shows the seasonal intensity variations of the H α line (Curve 1) and, for comparison, the lines P₂ with 6554 Å of hydroxyl (Curve 2). Curve 3 shows the variations in the OH band intensity in the region of from 9400 to 10,550 Å. As may be

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On Intensity Variations of the 6526 H α Line
in the Night Airglow Spectrum

S/020/60/134/004/007/023
B019/B067

seen, the H α lines attain their maximum intensity in July of each year, the hydroxyl lines have their maximum intensity in November - December. Emission line 5577 A reaches its maximum intensity in October, and lines 5893 A and 6300 A have their maximum in winter and their minimum in summer. Thus, the intensity variation of the atomic hydrogen differs from seasonal variations of other lines. For nine nights the spectrum was photographed in the two zenith distances 20°S and 70°N and the ratio $I_{70}/I_{20} = r_H$ was measured. The similar relations r_{OH} for the bands P $_2$ (6-1), Q(6-1), and Q(9-3) were determined. The ratio of the H α lines, obtained as a mean value from a large number of measurements was found to be 1.73 ± 0.14 ; that of hydroxyl was 2.40 ± 0.40 . The variability of the H α line intensity is obviously influenced by star and galaxy atomic hydrogen radiation. During the measurements celestial bodies emitting the H α line did not pass through the telescope field. The summer maximum of the H α line intensity cannot be explained by external influences. The authors assume that the summer maximum of the H α line intensity is connected with the solar counterpoint position which is shifted by 40° from the observation point in summer. However, rockets measured the Lyman lines at

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On Intensity Variations of the 6526 H α Line
in the Night Airglow Spectrum

S/020/60/134/004/007/023
B019/B067 6-623

altitudes of 85 to 120 km as earth's atmosphere emission with an albedo of 0.42. Assuming that an H α component exists in this emission, the quantity of H α emission measured on the earth's surface is about 1/3 of the total emission. In the authors' opinion the ratio of the hydroxyl emission agrees with the measurement data. According to the authors large amounts of neutral hydrogen are found up to altitudes of 85 - 120 km, OH up to 70 - 120 km. Furthermore, fluctuations of the solar activity influence the intensity of the H α line. There are 1 figure, 1 table, and 12 references: 8 Soviet, 2 US, 1 German, and 1 Czech. IX

ASSOCIATION: Abastumanskaya astrofizicheskaya observatoriya Akademii nauk GruzSSR (Abastumani Astrophysical Observatory of the Academy of Sciences Gruzinskaya SSR)

PRESENTED: May 19, 1960, by A. N. Terenin, Academician

SUBMITTED: May 12, 1960

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S/020/60/134/004/007/023
B019/B067

Таблица 1

Дата	Дата	$r_{1/2}$	СОН		
			$P_{(8-1)}$	$Q_{(8-1)}$	$Q_{(9-3)}$
9-10 VI 1959 г.		1,05	2,32	3,37	2,68
1-2 VII		1,52	1,77	1,83	2,08
2-3 VII		1,59	2,76	3,00	2,60
13-14 VII		1,60	—	1,87	2,44
2-3 VIII		1,92	2,14	2,14	3,02
20-30 VIII		1,49	3,19	2,35	3,15
Mean Средн.		1,73	—	—	—
30-31 X 1959 г.		0,70	2,14	—	—
2-3 XII		0,90	2,40	—	—
28-30 III 1960 г.		2,80	2,10	—	2,30
Mean Средн.		—	2,35	2,07	2,30

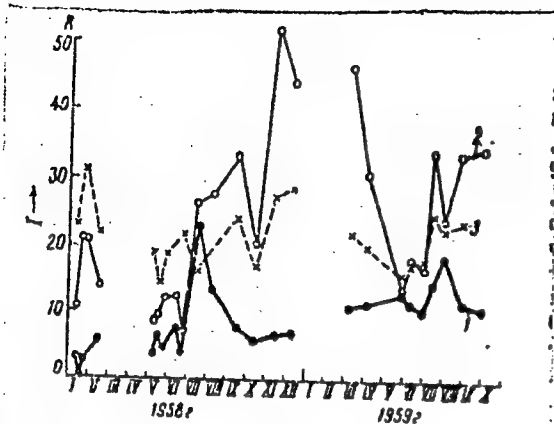


Fig. 1

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3,1810

37310
S/169/62/000/004/096/103
D290/D302

AUTHORS: Fishkova, L.M., and Markova, G.V.

TITLE: The OH emission at Abastumari

PERIODICAL: Referativnyy zhurnal. Geofizika, no. 4, 1962, 25-26, abstract 4G149 (V sb. Spektr. elektrofotometr. i radio-lokats. issled. polyarn. siyaniy i svecheniya nochn. neba., no. 6, M., AN SSSR, 1961, 17-20)

TEXT: Measurements of the nightglow spectra were made at the Abastumari observatory during the IGY; a SP-48 (SP-48) spectrograph was used. The OH emission between 6100 - 6700 Å was measured. The rotational temperature (T) of the OH bands was determined from the P branch of the (9-3) band, using an equation due to Hill and van Vleck. The logarithm of the intensity of the (903) band (I) was plotted against 1/T. It was found that I varied with T only if $T > 2500^{\circ}\text{K}$ (i.e. in winter); I was independent of T if $T < 2500^{\circ}\text{K}$ (i.e. in summer). The seasonal variations of I and T were measured from January, 1958 to September, 1959. I and T vary appreciably from night to night, and have similar mean seasonal variations with maxima in summer and minima in winter. 4

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The OH emission at Abastuman

S/169/62/000/004/096/103
D290/D302

xima in November-December. T has a distinct winter maximum and summer minimum. The mean T was $225 \pm 10^\circ\text{K}$, and the mean I was 160 rayleighs between January, 1958 and September, 1959. It was observed that the intensities of the H_α and OH P_2 (6-1) emissions were correlated. [Abstractor's note: Complete translation].

Card 2/2

DOLIDZE, M.V.; MAZNYI, M.F.; FISHKOVA, L.M.

Determining the zero-point of spectrophotometric temperatures.
Biul.Abast.astrofiz.obser. no.26:161-167 '61. (MIRA 15:3)
(Spectrophotometry)

ACCESSION NR: AT3012981

S/2501/62/000/029/0055/0076

AUTHOR: Fishkova, L. M.

TITLE: OH rotational temperature of the upper atmosphere

SOURCE: Abastumani. Astrofizich. observatoriya. Byul., no. 29, 1962.
Issledovaniya po programme MGG i mezhdunarod. geofiz. sotrudnichestva, 55-76

TOPIC TAGS: rotational temperature, OH rotational temperature, upper atmosphere, airglow, OH band intensity, activation energy, geomagnetic disturbance, aurora, molecular excitation

ABSTRACT: This paper is based on spectral observations of airglow in the range 5400-7000 A, made at the Abastumani Astrophysical Observatory during 1958-60. The OH rotational temperature (T_{OH}) of the upper atmosphere was measured on 106 different nights. The mean value of T_{OH} for Abastumani is $246 \pm 16K$. Seasonal variations were observed, with a maximum in November-December, a minimum in summer, and a variation of about 75K. The variations are shown in Fig. 1 on the Enclosures. The mean values of T_{OH} at Abastumani are near those for the same periods measured at higher latitudes. For a rotational temperature above 250K,

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ACCESSION NR: AT3012981

the dependence of OH band intensity on temperature, expressed as dependence of $\log I_{OH}$ on $1/T_{OH}$, is approximately linear, and the slope of the averaged straight line corresponds to an activation energy of 2.2 ± 0.8 kcal/mole. This relationship is shown in Fig. 2 on the Enclosures. The value is close to the activation energy of the O_3-H reaction. When the rotational temperature is below 250K, I_{OH} does not depend on T_{OH} , and this is more suggestive of the O_2-H mechanism of OH-molecule excitation. For rotational temperatures below 270K, the value obtained from the (9-3) band is the same as that from the (6-1) band, but when the value is above 270K, the latter is less than the former, and the difference may be as much as 40K. The ratio of intensities for these two bands does not depend on T_{OH} . It decreased continuously during the period of observation, from 2.0 in 1958 to 0.8 in the summer of 1959. During large geomagnetic disturbances followed by auroral displays in low latitudes, T_{OH} increases anomalously to values greater than 300K, and this is followed by an anomalous decrease in intensities of the OH bands. The author concludes that the seasonal variations in I_{OH} and T_{OH} and their anomalous variations during large geomagnetic disturbances may be due to powerful vibrational motions of the upper atmosphere followed by vertical displacements of emission layers. Orig. art. has: 9 figures, 6 tables, and 15 formulas.

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ACCESSION NR: AT3012981

ASSOCIATION: Astrofizich. observatoriya, Abastumani (Astrophysical Observatory)

SUBMITTED: 00

DATE ACQ: 15Oct63

ENCL: 02

SUB CODE: PH, AS

NO REF SOV: 018

OTHER: 009

Card 3/5

ACCESSION NR: AT3012982

S/2501/62/000/029/0077/0091

AUTHOR: Fishkova, L. M.

TITLE: Variations in intensity and three dimensional distribution of 6562 \AA H α emission in night airglow

SOURCE: Abastumani. Astrofizich. observatoriya. Byul., no. 29, 1962.
Issledovaniya po programme MKG i mezhdunarod. geofiz. sotrudnichestva, 77-91

TOPIC TAGS: night air glow, spectrography, galactic contamination, hydrogen, telluric corona

ABSTRACT: Results of spectrographic observation of H α emission in night airglow at the Abastumanskaya astrofizicheskaya observatoriya (Abastumani Astrophysical Observatory) for 1958-61 are reported. Seasonal variations in the intensity of H α for the direction 67°N show a maximum in July and a lesser maximum in March for each of the four years, though the March maximum is not usually so well defined or consistent. Only in polar regions is the July maximum observed. The March submaximum is due to galactic contamination. The N II doublet of the $\lambda 6583 \text{ \AA}$

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ACCESSION NR: AT3012982

line began to appear with increasing H_{α} . The galactic part of the emission was measured by comparing simultaneous readings at the given direction and in the polar region. The effects observed are due to resonance scattering of solar Lyman radiation by neutral hydrogen atoms in the telluric corona and in the upper atmosphere. The seasonal variations of H_{α} with summer maximum are related to seasonal variation in height of the earth's shadow in the direction of observation. Comparison of the seasonal H_{α} curve with data on hydrogen concentration in the telluric corona above the edge of the shadow shows the amplitudes of both distributions to be similar. The intensity ratio $I_{\alpha_1} / I_{\alpha_2}$ was obtained for several directions, and the values are tabulated. Orig. art. has: 5 figures and 2 tables.

ASSOCIATION: Abastumani. Astrofizich. observatoriya (Abastumani Astrophysical Observatory)

SUBMITTED: 00Apr62

DATE ACQ: 15Oct63

ENCL: 00

SUB CODE: AA, ES

NO REF SOV: 012

OTHER: 009

Cord 2/2

KALANDADZE, N.B.; SALUKVADZE, G.N.; FISHKOVA, L.M.

Relative transmittance of the objective of the 40cm. refractor and
of the correcting lens for the 36cm. Schmidt telescope of the
Abastumani Astrophysical Observatory. Biul. Abast. astrofiz. obser.
no.28:205-207 '62. (MIRA 16:7)
(Abastumani astrophysical observatory)

ACCESSION NR: AT4034380

S/266253/000/010/0035/0039

AUTHOR: Fishkova, L. M.

TITLE: The spatial distribution and variations of H sub Alpha emission in the nightglow

SOURCE: AN SSSR. Mezhdunarodnyy geofizicheskiy komitet. IV razdel programmy* MGG: Polyarnyye siyaniya i sveceniye nochnogo neba. Sbornik statey, no. 10, 1963, 35-39

TOPIC TAGS: meteorology, geophysics, aurora, nightglow, atmospheric emission, hydrogen emission, H sub Alpha emission, seasonal nightglow variation

ABSTRACT: The article deals with spectrographic observations carried out during 1958 - 1961 at the Abastumanskaya astrofizicheskaya observatoriya (Abastumani Astrophysical Observatory) in terms of the determination of the absolute intensity, seasonal variations and spatial distribution of H α emission in the nightglow. The spectra were photographed on an SP-48 spectrograph of high light admittance with a basic direction of observations $Z = 67^\circ$ N. A total of 115 different spectra of the night sky were obtained and processed. An annual repetition for four years of a maximum $I_{H\alpha}$ in July was observed, with a second maximum noted in March. A
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ACCESSION NR: AT4034380

seasonal variation curve is given, which indicates, again averaged out for the entire four-year period, a change of from 5 - 7 rayleighs in the winter to 20 - 25 rayleighs in the summer. The March maximum in the direction 67° N is explained by the imposition of the galactic component. An attempt is also made to explain the marked summer maximum, and it is pointed out that in the spectrograms of the summer period with intensive H_{α} emission there are no traces of the NII line. In order to study the intensity distribution over the vault of the heavens, during a number of nights spectrographic observations were made in two directions simultaneously ($Z = 70^{\circ}$ N and $Z = 20^{\circ}$ S); the author gives the result as $\frac{I_{70N}}{I_{20S}} = 1.73 \pm 0.14$.

Beginning in July of 1961, observations were carried out simultaneously on two SP-48 spectrographs, one of which was directed at point $Z_1 = 67^{\circ}$ N and the other either at the Pole ($Z_2 = 48^{\circ}$ N) or southward in the direction of the antisolar point. Measurements were conducted of the intensity ratio I_{Z_1}/I_{Z_2} in both directions for the line H_{α} ($r_{H_{\alpha}}$) and the line P_2 (6.1) OH (r_{OH}). A table of results is given. Cases were clearly evident in which $r_{H_{\alpha}}$ was distorted by the galactic component. The ratio of the H_{α} intensity in the direction 67° N to the H_{α} intensity at the Pole for all the nights indicated in the table from July through January remained approximately constant. In July, when maximum H_{α} was observed in the direction

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ACCESSION NR: AT4034380

67° N, $H\alpha$ was also intensive at the Pole. Since, in the region of the Pole, the stellar component does not change in the course of a year, the constancy of the ratio I_{67}/I_{48} serves as proof that the $H\alpha$ summer maximum is not the result of the influence of the galactic component. The mean value of $I_{67} = 1.4 \pm 0.1$. The

I_{48}
correction factor for the exclusion of the galactic component is ~ 1.7 . This value was used to correct the $I_{H\alpha}$ values in March-April, as measured in the direction 67° N, with the result that the March maximum disappeared. Observations in the antisolar direction showed that as the antisolar point is approached, the intensity of $H\alpha$ emission decreases and is minimal at the antisolar point. In the view of the author, the seasonal variations in $H\alpha$ intensity observed at Abastumani and its space distribution are best explained by the appearance of $H\alpha$ in the nightglow spectrum as the result of the resonance scattering of solar radiation in the lines of the Lyman series in the neutral hydrogen of the geocorona and upper terrestrial atmosphere. Orig. art. has: 1 table and 4 figures.

ASSOCIATION: Mezhdunarodnyy* geofizicheskiy komitet AN SSSR (Interdepartmental Geophysics Committee, AN SSSR)

SUBMITTED: 00

DATE ACQ: 12 May 64

ENCL: 00

SUB CODE: ES

NO REF SOV: 003

OTHER: 003

Card 3/3

FISHKOVA, L. M.

"H Emission in the Airglow."

report presented at the 13th Gen Assembly IUGG, Berkeley, Calif, 19-31 Aug 63.

FISHKOVA, L.M.; MARTSVALADZE, N.M.

Distribution of hydrogen in the upper atmosphere and terrestrial
corona. Astron. tsir. no. 253:1-4 J1 '63. (MIRA 17:5)

1. Abastumanskaya astrofizicheskaya observatoriya AN Gruzinskoy
SSR.

FISHKOVA, N-I.

AID P - 5070

Subject : USSR/Engineering-Welding
Card 1/1 Pub. 107-a - 10/11
Authors : Lomakin, V. I. and N. I. Fishkova
Title : The SL-60A electric riveter
Periodical : Svar. proizvod., 6, 31-32, Je 1956
Abstract : The authors describe the SL-60A electric riveter designed for welding sheet metal and structural steel of 2 to 5 mm thick. The riveter's technical characteristics and its design, the complete installation and its performance are presented. Three drawings, 1 photo and 1 table.
Institution : None
Submitted : No date

FISHKOVA, N. L.

18
✓ Spectrum analysis of Babbitt BK-2, N. L. Fishkova

(Secondary Metals Plant, Podolsk, Zamosynovskaya Ob. Za)

501-27195

Exp. with exp.

8
1-4E2C
1-4E4J

32-11-35/60

AUTHOR: Fishkova, N.L.

TITLE: Short Reports (II) (Korotkiye soobshcheniya)

PERIODICAL: Zavodskaya Laboratoriya, 1957, Vol. 23, Nr 11, pp. 1360-1361 (USSR)

ABSTRACT: In this paper the application of spectrcanalysis for the determination of the aluminum and magnesium content in a zinc distillate is recommended. In order to create the necessary conditions for spectral analysis and for the construction of the corresponding graduation diagrams synthetic standard samples were used, which had been produced from a repeatedly checked alloy Zn-Al-Mg with a 0.35% aluminum content and a 0.42% magnesium content. Thus, the standards had an aluminum content of 0.1, 0.05, 0.02 and 0.01% and, correspondingly, a magnesium content of 0.12, 0.06, 0.024 and 0.012%. A spectrograph " -22" with 3-stage reducer, a generator " -1" with contact breaker, and a microphotometer "M -2" were used; ignition amperage was 0.1 A, distance along the arc 2.5 mm, slit of the spectrograph 0.025 mm, and the films used were of the "Spektral'nyye" type I. The possibility of reproducing the results determined was within the limits of the contents: 0.005-0.2% aluminum and 0.001-0.2% magnesium.

Card 1/2

Short Reports (II)

32-11-35/60

ASSOCIATION: Podolsk' Plant for Secondary Metals (Podol'skiy zavod vtorichnykh
metallov)

AVAILABLE: Library of Congress

Card 2/2

FISHKOVA, N.L., KOMLEV, L.N.

Spectrum analysis of potassium, calcium, and sodium chlorides
in flux salts. Zav.lab. 26 no.5:566-567 '60. (MIRA 13:7)

1. Podol'skiy zavod vtorichnykh tsvetnykh metallov.
(Potassium chloride--Spectra) (Calcium chloride--Spectra)
(Salt--Spectra)

FISHKOVA, S. M.

USSR/Geophysics - Radiation, Infrared Night Sky

1. Jul 50

"Distribution of Brightness of Night-Sky Infrared Radiation Over the Celestial Arch," Ye. N. Pavlova, S. F. Rodionov, M. S. Sominskiy, S. M. Fishkova, Phys Inst, Leningrad State U imeni A. A. Zhdanov, and Mt El'brus Expedition of Acad Sci USSR

"Dok Ak Nauk SSSR" Vol LXXIII, No 1, pp 69-72

Infrared measurements of night sky in fall 1949 on Mt El'brus (2,200 and 4,200 m elevation) using photometers with secondary-electron electrostatic tube. Confirmed infrared radiation maximum at midnight. Found intensities of 1.12×10^{-2} and 3.07×10^{-2} erg/sq cm sec sterad, respectively, for heights of 2,200 and 4,200 m. Found radiating layer to be 900 km high. Submitted 4 May 50 by Acad A. A. Lebedev.

166T29

~~FISHKOVA, T. YA.~~

24.2000

77304

SOV/57-30-2-1/18

AUTHORS: Kel'man, V. M., Yavor, S. Ya., Fishkova, ~~T. Ya.~~

TITLE: Achromatic Magnetic Mirrors

PERIODICAL: Zhurnal tekhnicheskoy fiziki, 1960, Vol 30, Nr 2,
pp 129-137 (USSR)

ABSTRACT: To achieve a deflection or displacement of non-monochromatic beams of charged particles without separating them according to energy, Kel'man and Lyubimov (Izv. AN SSSR, ser. fiz., 18, 155, 1954) used a magnetic mirror whose magnetic field vector potential A satisfies the equation:

$$A_x = A(yz) = \operatorname{Re} \left[-\frac{H_0}{k} (y + iz)^k \right], \quad A_y = A_z = 0, \quad (1)$$

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where H_0 and k are constants. For a particular choice of k , one can find an angle α_0 for the incoming

Achromatic Magnetic Mirrors

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SOV/57-30-2-1/18

particles, such that all particles of various energies entering the field at that angle in the central plane describe similar trajectories and emerge out of the field at the point of entrance as a single beam (see Fig. 1).

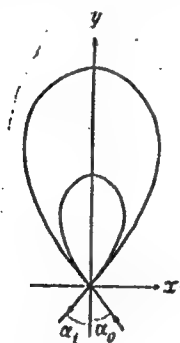


Fig. 1. Similar trajectories in an achromatic magnetic mirror. (α_0) angle of incidence; (α_1) angle of reflection.

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In addition to checking the known values of α_0 for $k = 1$ and $k = 2$, the authors of this paper evaluated the necessary k 's for angles $\alpha_0 = 30^\circ$ and $\alpha_0 = 45^\circ$.

Mirrors with $\alpha_0 = 30^\circ$ angles arranged along sides of an equilateral triangle or mirrors with $\alpha_0 = 45^\circ$ forming a parallelogram could then be used to maintain closed trajectories of particles. The authors start from the solution of the differential equation of motion for charged particles in the central plane of a two-dimensional magnetic field, which for the initial conditions $x_0 = y_0 = 0$ has the form:

$$x = \int_0^y \frac{\frac{eH_0}{mcv} \frac{y^k}{k} - \sin \alpha_0}{\sqrt{1 - \left(\frac{eH_0}{mcv} \frac{y^k}{k} - \sin \alpha_0 \right)^2}} dy. \quad (5)$$

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Here e , m , and v are charge, mass, and velocity, respectively, of the particle; c is velocity of light;

$$m = \frac{m_0}{\sqrt{1-v^2/c^2}}, \text{ where } m_0 \text{ is rest mass of the particle.}$$

In the central plane ($z = 0$) the field has the value:

$$H_x = H_y = 0, \quad H_z = H_0 y^{k-1}, \quad (4)$$

where k can take integer and fractional values. Using the known values for k versus α_0 : $k = 1, \alpha_0 = 90^\circ$; $k = 2, \alpha_0 = 40^\circ$; and $k = 3, \alpha_0 = 28^\circ$, the authors constructed an approximate curve $k = k(\alpha_0)$. Choosing approximate k values, they calculated curves by performing numerical integration of Eq. (5). Typical curves are presented on Fig. 3. From the form of the curve they could decide if k should be increased or decreased to obtain the desired correct curve.

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Achromatic Magnetic Mirrors

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SOV/57-30-2-1/18

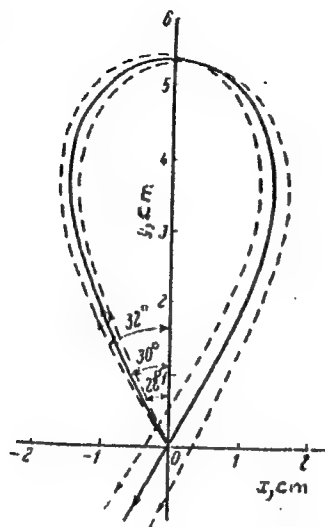


Fig. 3. Trajectory of charged particles in the central plane of the mirror, with $k = 2.75$ at incidence angles of 28° , 30° , and 32° .

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Achromatic Magnetic Mirrors

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The results of calculations are contained in Table A.

Table A. (a) Initial conditions; (b) data obtained by numerical integration of system of Eqs. (7); (c) data obtained by numerical integration of Khurgin's Eq. (10); (d) degrees.

k	a			b				c	
	α_0 degrees	T_0 degrees	x_0 cm	α_1 degrees	γ_1 degrees	x_1 cm	α_1 cm	T_1 degrees	α_1 cm
2	40.7	3	0	46.2	-7.4	-0.71	1.88	—	—
2	40.7	0	2.00	36.6	-2.6	0.76	-1.12	—	—
3	27.6	3	0	29.0	4.0	-0.61	1.67	—	—
3	27.6	0	1.00	28.0	-1.7	-1.18	1.90	—	—
1.81	45	3	0	51.7	-9.2	-0.81	2.01	-5.4	2.08
1.81	45	0	2.00	44.6	-0.4	0.70	-1.92	-2.6	-2.58
2.75	30	3	0	30.2	0.9	-0.67	1.68	8.2	1.82
2.75	30	0	0.50	28.5	2.4	-0.26	1.08	4.4	1.17
2.75	30	0	2.00	27.7	-4.2	-0.58	-0.03	17.0	4.67

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This table contains also data about trajectories not lying in the central plane, obtained by two methods. One is by numerically integrating the exact system of equations of motion:

$$\left. \begin{aligned} \frac{dx}{ds} &= C + \frac{eH_0}{mcv} \frac{(y^2 + z^2)^{\frac{k}{2}}}{k} \cos\left(k \arctg \frac{z}{y}\right), \\ \frac{d^2y}{ds^2} &= -\frac{eH_0}{mcv} (y^2 + z^2)^{\frac{k}{2}-1} \left[y \cos\left(k \arctg \frac{z}{y}\right) - z \sin\left(k \arctg \frac{z}{y}\right) \right] \times \\ &\quad \times \left[C + \frac{eH_0}{mcv} \frac{(y^2 + z^2)^{\frac{k}{2}}}{k} \cos\left(k \arctg \frac{z}{y}\right) \right], \\ \frac{d^2z}{ds^2} &= \frac{eH_0}{mcv} (y^2 + z^2)^{\frac{k}{2}-1} \left[y \sin\left(k \arctg \frac{z}{y}\right) + z \cos\left(k \arctg \frac{z}{y}\right) \right] \times \\ &\quad \times \left[C + \frac{eH_0}{mcv} \frac{(y^2 + z^2)^{\frac{k}{2}}}{k} \cos\left(k \arctg \frac{z}{y}\right) \right], \end{aligned} \right\} (7)$$

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where s is length of path traveled by the particle, C is a constant which is a function of initial conditions. The other is by integrating the approximate equation by Khurgin:

$$\frac{d^2z}{ds^2} = \left[\left(\frac{eH_0}{mcv} \right)^2 \frac{k-1}{k} y^{2(k-1)} - \frac{eH_0}{mcv} (k-1) y^{k-2} \sin \alpha_0 \right] z. \quad (10)$$

γ_0 denotes the angle between the XY plane and initial particle direction for particles starting in the central plane (see Fig. 6); z_0 is the initial distance from the XY plane for particles entering the field parallel to the XY plane; γ_1 is the angle between direction of the exit of the particle and the central plane; α_1 is the angle between the projection of that direction in the XY plane and the negative Y axis direction. In all cases the quantity $\frac{eH_0}{mcv}$ was equal to 0.04 per cm^k .

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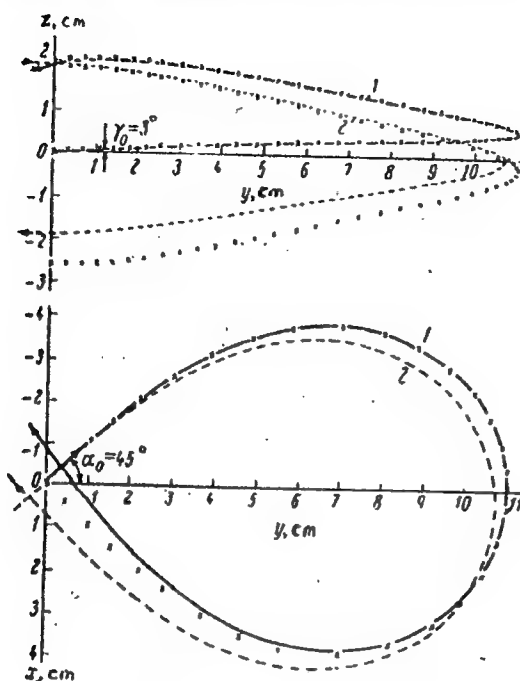
Achromatic Magnetic Mirrors

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Figure 6 represents an interesting case where a particle entering the field parallel to the central plane comes out again parallel to that plane (curve 2). A field with such a special k value can then be used for displacement of parallel beams of particles with various energies.

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Fig. 6
(caption on
next card)

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Caption to Fig. 6.

Fig. 6. Projections on YZ and XY planes of two space trajectories in a field with $k = 1.81$. Initial conditions: trajectory (1): $x_0 = y_0 = z_0 = 0$, $\alpha_0 = 45^\circ$, $\gamma_0 = 3^\circ$; trajectory (2): $x_0 = y_0 = 0$, $z_0 = 2$ cm, $\alpha_0 = 45^\circ$, $\gamma_0 = 0$. Crosses indicate trajectories with the same initial conditions, but computed using the method of Khurgin.

Using a method described by Kel'man and Lyubimov, the authors constructed a field for $k = 1.81$, and its values agreed fairly well with Eq. (4). Further improvements were obtained by means of additional windings on the shielding and the magnet laminas. The authors point out that one can obtain the desired result,

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Achromatic Magnetic Mirrors

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SOV/57-30-2-1/18

1. e., the deflection or displacement of a nonmonochromatic charged particle beam by utilizing two mirrors with a lateral displacement of particles of different energies in the manner indicated on Fig. 10.



Fig. 10. Deflection of a nonmonochromatic beam by means of two mirrors with noncompensated displacements.

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Achromatic Magnetic Mirrors

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There are 10 figures; 1 table; and 6 references, 5 Soviet, 1 U.S. The U.S. reference is: W. K. H. Panofsky, J. A. McIntyre, Rev. Sci. Instr., 25, 287, 1954.

ASSOCIATION: Physico-technical Institute AS USSR, Leningrad (Fiziko-tehnicheskii institut AN SSSR, Leningrad)

SUBMITTED: July 6, 1959

Card 13/13

DYMNIKOV, A.D.; FISHKOVA, T.Ya.; YAVOR, S.Ya.

System of four quadrupole lenses, analogous to axially symmetric lenses. Izv. AN SSSR. Ser. fiz. 27 no.9:1131-1134 S '63.
(MIRA 16:9)

1. Fiziko-tekhnicheskiy institut im. A.F.Ioffe AN SSSR.
(Electron optics)

YAVOR, S. Ya.; PYMNIKOV, A. D.; FISHKOVA, T. Ya.; SHPAK, G. V.

"Electromagnetic achromatic systems."

report submitted to 3rd European Regional Conf, Electron Microscopy, Prague,
26 Aug-3 Sep 64.

L 13568-65

ACCESSION NR: AP4046683

S/0109/64/009/010/1828/1831

AUTHOR: Dy*mnikov, A. D.; Fishkova, T. Ya.; Yavor, S. Ya.

TITLE: Electron-optical properties of a pseudo-axisymmetric quadrupole system ^B

SOURCE: Radiotekhnika i elektronika, v. 9, no. 10, 1964, 1828-1831

TOPIC TAGS: quadrupole lens, axisymmetric system

ABSTRACT: This is a continuation of an earlier author's work (Zh TF, 1963, 33, 7, 851). A set of quadrupole lenses similar to an axisymmetric system is investigated. The set comprises four quadrupole lenses, the field of each one being turned by 90° with respect to the field of the preceding one. Two identical outer lenses may be different from two identical inner lenses. The field inside the lens is assumed to be constant; outside the lens, equal to zero; field distributions within the lenses are represented by equivalent rectangles (see Enclosure 1). Formulas for the focal lengths and positions of the foci depending on the

Card 1/3

L 13568-65

ACCESSION NR: AP4046683

excitation are developed. An experimental verification was conducted by the method of two screens applied to a set of two electrostatic quadrupole lenses mounted on an electron-optical bench (some details reported). Good agreement between theoretical and experimental results is claimed. Orig. art. has: 4 figures and 10 formulas.

ASSOCIATION: Fiziko-tekhnicheskiy institut AN SSSR (Physico-Technical Institute, AN SSSR)

SUBMITTED: 28Jun63

ENCL: 01

SUB CODE: EC, OP

NO REF SOV: 002

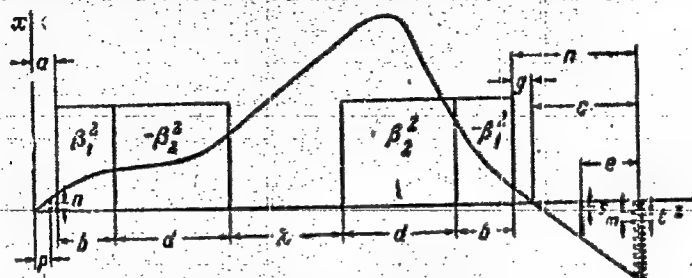
OTHER: 001

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ACCESSION NR: AP4046683

ENCLOSURE: 1

0



Determination of optical characteristics of a
pseudo-axymetrical quadrupole system by the
method of two screens

Card 3/3

ACCESSION NR: AP4009920

S/0057/64/034/001/0053/0059

AUTHOR: Fishkova, T.Ya.; Shpak, Ye.V.; Yavor, S.Ya.

TITLE: Charged particle escape from a reflected electron discharge

SOURCE: Zhurnal tekhnicheskoy fiziki, v.34, no.1, 1964, 53-59

TOPIC TAGS: gas discharge, reflected electron discharge, charged particle escape, anomalous charged particle escape, discharge in magnetic field

ABSTRACT: The transverse escape of charged particles from a gas discharge in a longitudinal magnetic field was investigated. Electron reflecting electrodes were provided at the two ends of the discharge region to increase the ionization. Except for the higher degree of ionization achieved, the experiments were similar to those reported by J.F.Bonnal, G.Briiford and C.Manus (Phys.Rev.Lett.6,665,1961; Report No.9 at the Salzburg Conference,1961), and similar anomalous results were obtained. The discharge tube was 200 cm long and 17.8 cm in diameter. The two reflecting electrodes were 11.6 cm in diameter and were separated by 105 cm. One reflector carried a hot cathode 2 or 3 cm in diameter. The discharge current was received by one or more cylindrical anodes somewhat smaller in diameter than the reflecting electrodes.

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ACC.NR: AP4009920

When a single anode was employed, it was provided with two wall probes, one located midway between the two reflecting electrodes, and one located 16 cm from this midpoint. With the discharge tube filled with argon at 5×10^{-4} to 10^{-3} mm Hg, discharge currents up to 10 A at potentials up to 500 V were observed in longitudinal magnetic fields up to 2100 Oe. The degree of ionization was determined from the attenuation of 3.2 cm and 0.85 cm microwaves. Ionizations up to 7% were deduced from the 3.2 cm measurements. A highly ionized filament was produced on the axis of the discharge by admitting gas through an opening in the center of one of the reflectors. The ionization in this filament was estimated from the 0.85 cm microwave measurements at 50% or greater. When several anodes were employed, the current to the central anode was negative (preponderance of negatively charged particles collected), and the currents to the remaining anodes were positive. The currents to all the anodes behaved in a similar way as the magnetic field was varied: when the field was increased from zero the current would first decrease (in absolute value), reach a sharp minimum at a small value of the field, increase to a broad maximum, and finally decrease again at high fields. The positive ion current to the central wall probe of the single anode was measured as a function of the longitudinal magnetic field while the total discharge current was held constant by adjusting the applied potential or the cathode temperature. In these measurements the probe was kept

Card ^{2/3}

ACC.NR: AP4009920

30 V negative with respect to the anode. The positive ion current first increased with increasing field, then decreased to a broad minimum, and finally increased again at high fields. The initial increase and subsequent decrease of the ion current are briefly discussed. The anomalous increase of the ion current at high field strengths is not explained. Orig.art.has: 8 figures.

ASSOCIATION: Fiziko-tekhnicheskii institut im.A.P.Iofe AN SSSR, Leningrad (Physical-Technical Institute, AN SSSR)

SUBMITTED: 12Nov62

DATE ACQ: 10Feb64

ENCL: 00

SUB CODE: PH

NR REF SOV: 002

OTHER: 003

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Card

L 12829-65 EWT(1)/EPA(w)-2/EEC(t)/EEC(h)-2/ENA(m)-2 Pub-10 ASD(a)-5/AS(mp)-2/
 BSD/AFETR/AFWL/SSD/ESD(dp)/ESD(gp)/ESD(t)
 ACCESSION NR: AP4045286 8/0057/64/034/009/1711/1714

AUTHOR: Dy*mnikov, A.D.; Pishkova, T.Ya.; Yavor, S.Ya.

TITLE: Spherical aberration of a combined electrostatic and magnetic quadrupole lens

SOURCE: Zhurnal tekhnicheskoy fiziki, v.34, no.9, 1964, 1711-1714

TOPIC TAGS: electron optics, spherical aberration, magnetic lens, quadrupole lens

ABSTRACT: The authors and collaborators have previously described a combined electrostatic and magnetic quadrupole lens that can be made achromatic by proper choice of the ratio of the electric to the magnetic field (ZhTF 31,1439,1961; 33,368,1963; 34,99,1964). In the present short communication they discuss the spherical aberration in the converging plane of a lens of this type for which the field configuration is two-dimensional, i.e., for which the fields are independent of one Cartesian coordinate, the axis of which serves as the axis of the lens. The trajectory equations are taken from Yu.V.Vandakurov (ZhTF,27,1840,1957), and it is noted that the equations as written by A.Septier (C.R. 256,2325,1963) contain an error. The spherical aberration in the first Gauss plane, $-d/f \tan^3 i$ (where d is the distance in the image plane of the trajectory from the axis, f is the focal length, and i is

L 12829-65

ACCESSION NR: AP4045286

the inclination of the trajectory (at the object point) was found to be $1/2$ for an electrostatic lens, $3/16$ for a magnetic lens, $1/4$ for the achromatic version, and $1/6$ when the ratio of the electric to the magnetic field is such as to minimize the spherical aberration. The spherical aberration was found to be less by a factor 4 in the plane of least confusion than in the Gauss plane. Orig.artihias: 22 formulas and 1 figures.

ASSOCIATION: Fiziko-tekhnicheskii institut im.A.P.Ioffe AN SSSR, Leningrad (Physico-technical Institute, AN SSSR)

SUBMITTED: 19Dec63

ENCL: 00

SUB CODE: EC, OF

NR REF SOV: 003

OTHER: 001

2/2

ACCESSION NR: AP4019973

S/0020/64/154/006/1321/1324

AUTHOR: Dy*mnikov, A. D.; Fishkova, T. Ya.; Yavor, S. Ya.

TITLE: Spherical aberration of a two-dimensional electrostatic quadrupole lens without antisymmetric planes

SOURCE: AN SSSR. Doklady*, v. 154, no. 6, 1964, 1321-1324

TOPIC TAGS: spherical aberration of electrostatic lens, quadrupole electrostatic lens, electron microscope lens, spherical aberration correction, electron microscope, spherical aberration

ABSTRACT: In the present paper, a method has been developed for the correction of spherical aberration which is based on the maintaining of symmetry planes of the field in the absence of antisymmetry planes. An example of such asymmetry is presented by an electrostatic lens which has different distances between electrodes of the same sign. The possibility of such a correction is shown on a two-dimensional electrostatic quadrupole lens. In the equations for trajectories of

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ACCESSION NR: AP4019973

charged particles, terms are considered which are necessary for the computation of aberrations of the third order. The computation shows that spherical aberration cannot be compensated along the whole image. The length of the linear image is not greatly affected by spherical aberration. The suggested method of correction permits one either to reduce the spherical aberration along the whole length of the image, or to completely compensate it in the center. Orig. art. has: 3 figures and 24 equations.

ASSOCIATION: Fiziko-tekhicheskly institut im. A. F. Ioffe Akademii Nauk SSSR (Physics-Engineering Institute, Academy of Sciences, SSSR)

SUBMITTED: 24Sep63

DATE ACQ: 23Mar64

ENCL: 00

SUB CODE: PH

NO REF SOV: 004

OTHER: 000

Card 2/2

DYMNIKOV, A.D.; FISHKOVA, T.Ya.; YAVOR, S.Ya.

Electron-optical properties of a pseudoaxially-symmetrical
quadrupole system. Radiotekh. i elektron. 9 no.10:1828-1831
O '64. (MIRA 17:11)

1. Fiziko-tekhnicheskiy institut im. A.F. Ioffe AN SSSR.

DYMNIKOV, A.D.; FISHKOVA, T.Ya.; YAVOR, S.Ya.

Spherical aberration of a composite quadrupole lens. Zhur. tekhn. fiz.
34 no.9:1711-1714 S '64. (MIRA 17:10)

1. Fiziko-tekhnicheskiy institut imeni Lofe AN SSSR, Leningrad.

L 40939-65 EWT(1) P1-4 IJP(c)

ACCESSION NR: AP5007287

S/0057/65/035/003/0431/0440

AUTHOR: Dyanikov, A.D.; Fishkova, T.Ya.; Yavor, S.Ya.

TITLE: Influence of the geometric parameters on the optical properties of a system of four quadrupole lenses, analogous to an axially symmetric lens

SOURCE: Zhurnal tekhnicheskoy fiziki, v.35, no.3, 1965, 431-440

TOPIC TAGS: electron optics, magnetic quadrupole lens, axial symmetry

ABSTRACT: The authors have previously described and discussed in detail a type of quadrupole quadruplet consisting of two identical quadrupole doublets and having properties analogous to those of an axially symmetric lens (ZhTF 33,851,1963; Izv. AN SSSR, Ser.fiz.27,1131,1963; Radiotekhnika i elektronika 9, No.10,1963; Third European Regional Conference on Electron Microscopy, Prague,1964). These quadrupole quadruplets are capable of forming a true image and, to compensate for their complexity, have some advantages over axially symmetric lenses, including possibilities for compensation of spherical and chromatic aberrations. The authors have performed extensive numerical computations of the first order optical properties of these quadruplets as functions of the system parameters; here they present the re-

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ACCESSION NR: AP5007287

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sults of these calculations in graphical form suitable for preliminary design purposes and discuss them at some length. The system parameters are the lengths of the two quadrupoles of the doublet, the separation between them, the separation between the two doublets, and the excitation of one quadrupole; the excitations of the other quadrupoles are then determined by the condition for axial quasisymmetry. In the discussion, particular attention is given to conditions for minimum focal length and maximum magnification. "In conclusion, the authors express their deep gratitude to V.A. Novikova for performing the laborious computations on the BESM-2 computer." Orig.art.has: 2 formulas and 12 figures.

ASSOCIATION: Fiziko-tekhnicheskiy institut im. A.F. Ioffe AN SSSR, Leningrad
(Physico-technical Institute, AN SSSR)

SUBMITTED: 21 May 64

ENCL: 00

SUB CODE: OP, EM

NR REF SCV: 008

OTHER: 003

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L 49242-65 EWT(1)/EPA(w)-2/EEC(t)/EWA(m)-2 Pz-6/Pq-4/Pi-4 IJP(c) AT
 UR/0057/65/035/004/0759/0761
 ACCESSION NR: AP5010815

AUTHOR: Dymnikov, A.D.; Fishkova, T.Ya.; Yavor, S.Ya.

TITLE: Spherical aberration in the width of a line image formed by a combined quadrupole lens

SOURCE: Zhurnal tekhnicheskoy fiziki, v. 35, no. 4, 1965, 759-761

TOPIC TAGS: electron optics, ²¹electron lens, quadrupole lens, spherical aberration

ABSTRACT: The authors employ their differential equation for the trajectory in a combined electrostatic and magnetic quadrupole lens (ZhTF, 34, 1711, 1964) to calculate the spherical aberration in the width of a line image. The spherical aberration in the converging plane is always positive, but outside this plane it may have either sign and depends on the relative excitation of the electrostatic and magnetic quadrupoles. Calculations for a thin lens with a bell-shaped field distribution on the axis show that the spherical aberration is positive over the entire length of the line image for a wide range of relative electric and magnetic excitations, including that for which the combined quadrupole is achromatic. In

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L 49242-65

ACCESSION NR: AP5010815

these calculations it is necessary to include the second derivative of the field strength on the axis; M.G.Markovich and I.I.Tsulckerman (ZhTF, 30, 1362, 1960) and A.M.Strashkevich (ZhTF, 33, 512, 1963) have obtained erroneous results by neglecting this term, while retaining other terms of higher order. The spherical aberration of the thin quadrupole lens is much less than that of an axially symmetric lens with the same axial field strength distribution. Orig. art. has: 13 formulas.

ASSOCIATION: Fiziko-tekhnicheskiy institut im. A.F.Ioffe AN SSSR, Leningrad
(Physico-technical Institute, AN SSSR)

SUBMITTED: 16Jul64

ENCL: 00

SUB CODE: EM, OP

NR REF SOV: 003

OTHER: 000

Card 2/2

L 54759-65 EWT(1) Pq-4 LJP(c) UR/0057/65/035/006/1068/1076
 ACCESSION NR: AP5015631
 AUTHOR: Dymnikov, A.D.; Fishkova, T.Ya.; Yavor, S.Ya.
 TITLE: Spherical aberration of a combined quadrupole lens with a bell-shaped field distribution 21
 SOURCE: Zhurnal tekhnicheskoy fiziki, v.35, no.6, 1965, 1068-1076
 TOPIC TAGS: electron optics, magnetic quadrupole lens, electrostatic quadrupole lens, spherical aberration
 ABSTRACT: The authors calculate the spherical aberration of a combined electrostatic and magnetic quadrupole lens similar to those for which they have previously discussed chromatic aberration (ZhTF 34, 1711, 1964; 35, No.4, 1965). The calculations are based on formulas published in the earlier papers. Formulas for the spherical aberration are first derived for an arbitrary distribution of field strength on the axis and these are then specialized to the case in which the electric and magnetic fields are both proportional to

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L 54759-65
ACCESSION NR: AP5015631

$1/(1 + (z/d)^2)^2$, where z is the axial coordinate and d is a constant. Curves are given showing the spherical aberration coefficients as functions of the total excitation and of the ratio of the electric to the magnetic field strength. The spherical aberration of a doublet consisting of two combined electrostatic and magnetic quadrupole lenses is discussed briefly and it is shown that the spherical aberration can be compensated over the entire length of the linear image. Further calculations concerning doublets are in progress. Orig.art. has: 39 formulas and 5 figures.

ASSOCIATION: Fiziko-tekhnicheskii institut im.A.F.Ioffe AN SSSR,
Leningrad (Physico-technical Institute, AN SSSR)

SUBMITTED: 16Dec64

ENCL: 00

SUB CODE: OP,EM

NR REF SOV: 002

OTHER: 001

Card 2/2

L 3455-66 EWT(1) IJP(c)

ACCESSION NR: AP5017204

UR/0020/65/162/006/1265/1268

AUTHORS: Dymnikov, A. D.; Fishkova, T. Ya.; Yavor, S. Ya.

TITLE: Spherical aberration of a combined quadrupole lens with rectangular field distribution

SOURCE: AN SSSR. Doklady, v. 162, no. 6, 1965, 1265-1268

TOPIC TAGS: electron optics, magnetic quadrupole lens

ABSTRACT: In order to get around the mathematical difficulties involved in using a rectangular model for the calculation of spherical aberrations, the authors have derived for the spherical aberration expressions which do not contain the derivatives of the fields in explicit form. These expressions were obtained by solving, by perturbation theory, trajectory equations given in an earlier paper (ZhTF v. 34, 1711, 1964), and by subsequently transforming the obtained formulas by integration by parts. The particular analysis pertains to a field which is bounded in the axial direction when a pointlike object lying on the axis, as well as its linear image, are both situated in

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L 3455-66

ACCESSION NR: AP5017204

3

a field-free space. Plots of the coefficients of spherical aberration, obtained on the basis of these calculations, are included. The results were compared with experimental data for a parallel beam and were found to be in good agreement. This report was presented by B. P. Konstantinov. Orig. art. has: 3 figures and 19 formulas

ASSOCIATION: Fiziko-tekhnicheskii institut im A. F. Ioffe Akademi nauk SSSR (Physicotechnical Institute, AN SSSR)

SUBMITTED: 31Dec64

ENCL: 00

74.55
SUB CODE: OP

NR REF SOV: 002

OTHER: 001

BVK

Card 2/2

L 36550-66 EWT(1)/T IJP(c)

ACC NR: AP6015754

(A,N)

SOURCE CODE: UR/0048/66/030/005/0739/0741

AUTHOR: Dymnikov, A.D.; Fishkova, T.Ya.; Yavor, S.Ya.

ORG: none

TITLE: Dependence of the spherical aberration coefficients of a quadrupole lens on the object distance (rectangular model) /Report, Fifth All-Union Conference on Electron Microscopy held in Sverdlovsk 6-8 July 1965/

SOURCE: AN SSSR. Izvestiya, Seriya fizicheskaya, v. 30, no. 5, 1966, 739-741

TOPIC TAGS: electron optics, spherical aberration, magnetic quadrupole lens, electrostatic field

ABSTRACT: Equations given elsewhere by the present authors (Dokl. AN SSSR, 162, 1265 (1965)) have been employed to calculate, with the aid of a computer, the spherical aberrations of magnetic and electrostatic quadrupole lenses. Curves are presented showing each of the four spherical aberration coefficients of both types of quadrupole lens as functions of the object distance for different values of the excitation. The principal spherical aberration coefficient for the converging plane is always positive and has a minimum; the relation between excitation and object distance for the minimum value of this coefficient is presented graphically. The spherical aberration in the width of a linear image in the median plane for a magnetic quadrupole lens is compared

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L 36550-66

ACC NR: AP6015754

with the corresponding quantity for an analogous axially symmetric lens; for equal object distances and focal lengths, the quadrupole lens has the smaller spherical aberration. Orig. art. has: 4 formulas, 9 figures, and 1 table.

SUB CODE: 20/

SUM DATE: 00/

ORIG REF: 001/

OTH REF: 001

Card

2/2 MLP

ARTSIMOVICH, G.V., kand. tekhn. nauk; ASYCHENKO, Ye.I., kand. tekhn. nauk;
STARKOV, V.I., inzh.; MOSKALENKO, V.P., inzh.; FISHMAN, A.I., inzh.

Using hard-alloy tools in boring frozen soils with the BKGM machines.
Stroi. i dor. mash. 10 no.10:24-25 0 '65. (MIRA 18:10)

SHKLOVSKIY, M. Ya.; CHERKASOV, A. N.; FISHLER, B. M.

The GEPK-130-17.5 swing cantilever railroad crane. Transp.
stroil. 13 no.4:34-36 Ap '63. (MIRA 16:4)

1. Glavnyy tekhnolog mostostroitel'nogo tresta No. 2 (for Shklovskiy).
2. Starshiy inzhener Vsesoyuznogo nauchno-issledovatel'skogo institut transportnogo stroitel'stva Ministerstva transportnogo stroitel'stva (for Cherkasov).
3. Vedushchiy konstruktor Uglichskogo remontno-mekhanicheskogo zavoda (for Fishler).

(Cranes, derricks, etc.)

(Bridge construction—Equipment and supplies)

FISHMAN, A.

Combining mass participation and skill. Voen. znan. 41 no.8:38-39 Ag
'65. (MIRA 18:7)

1. Predsedatel' strelkovoy seksii Vsesoyuznogo dobrovol'nogo obshchestva
sodeystviya armii, aviatsii i flotu SSSR pryadil'no-nitochного kombinata
imeni S.M.Kirova, Leningrad.

KAPTSEV, N.N., inzh.; FISHMAN, A.M., inzh.

Machining holes with burnishing broaches. Mashinostroenie
no.3:43-44 My-Je '65. (MIRA 18:6)

MIZIN, V.G., inzh.; SAFONOV, B.P., inzh.; SEROV, G.V., inzh.; KOROBEYNIKOV,
V.V., inzh.; FISHMAN, B.D., inzh.; TRAKHOV, V.M., inzh. NIKITIN, Yu.K.

Production of 75% ferrosilicon with coke from a charge with
an increased content of gas coe' 3tal' 25 no.2:133-135
F '65. (MIRA 18:3)

1. Kuznetskiy zavod ferrosplavov i Kuznetskiy filial Vostochnogo
nauchno-issledovatel'skogo uglekhimicheskogo instituta.

ACCESSION NR: AP4035109

8/0191/64/000/005/0066/0067

AUTHOR: Kovchina, L. D.; Fishman, B. N.

TITLE: Hermetic sealing of articles with epoxide compound under vacuum

SOURCE: Plasticheskiye massy*, no. 5, 1964, 66-67

TOPIC TAGS: hermetic sealing, equipment, apparatus, epoxide sealing, epoxide coating, vacuum casting apparatus

ABSTRACT: Equipment was designed for the hermetic sealing of articles with epoxy compounds under vacuum (fig. 1). In this apparatus a number of articles to be coated are arranged on the turn table (fig. 2), the system is put under 740-750 mm Hg vacuum, the epoxy is poured onto the article in the vicinity of the pour spout, epoxy flow is shut off, the table is rotated and epoxy coating repeated until each successive article has been treated. Orig. art. has: 3 figures.

ASSOCIATION: None

SUBMITTED: 00

ENCL: 02

Card 1/4

ACCESSION NR: AP4035109

SUB CODE: IE

NO REF SOV: 000

OTHER: 000

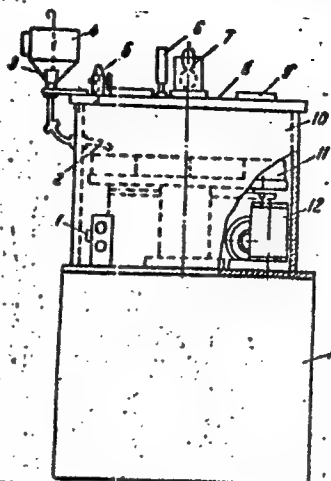
Card 2/4

ACCESSION NR: AP4035109

ENCLOSURE: 01

Fig. 1. Vacuum casting arrangement

- 1--push button control
- 2--pouring spout
- 3--conical stopper
- 4--hopper (for epoxide)
- 5--stopcock for vacuum release
- 6--vacuum gage
- 7--lamp
- 8--cover
- 9--window
- 10--housing
- 11--turn table
- 12--reducing gear
- 13--vacuum pump



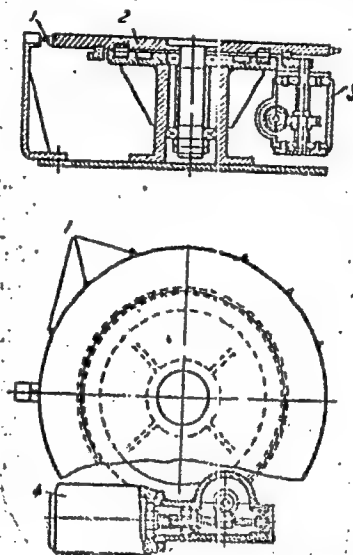
Card 3/4

ACCESSION NR: AP4035109

ENCLOSURE: 02

Fig. 2. General view and drive mechanism for turn table.

- 1--supports for turn table
- 2--turntable
- 3--reducing gear
- 4--electric motor



Card

4/4

PHASE I BOOK EXPLOITATION 479

: Bezrukov, V.M.; Glukh, Ye. M.; Kostin, K.F.; Neyman, Z.B.;
Fishler, Ya. L.; Chetchuyev, G.A.

Ural'skiy zavod elektromashinostroyeniya (The Ural Electrical
Machine-building Plant) Moscow, Mashgiz, 1957. 125 p.
(Series: Iz istorii mashinostroyeniya na Urale, vyp. 7)
4,000 copies printed.

Tech. Ed.: Dugina, N.A.; Editorial Board of Series: Aleksandrov,
A.I., Candidate of Technical Sciences; Eogachev, Doctor
of Technical Sciences; Vol'skov, A.A., Candidate of Historical
Sciences; Dovgopol, V.I.; Kozlov, A.G., Senior Scientific Worker,
Archives Dept.; Sustavov, M.I., Engineer.

PURPOSE: This book is intended for engineers, technicians and
scientists. It can also be of use to students, agitators,
propagandists and machine-building workers.

Card 1/3

The Ural Electrical Machine-building Plant 479

COVERAGE: The book contains a brief history of the construction and development of the Ural-Electrical Machine-building Plant and a detailed description of the progress achieved in designing and building various kinds of machinery including water-wheel generators, a-c and d-c electrical machines, transformers, high-voltage equipment, mercury-arc rectifiers and machines for the electrification of the national economy. Plans for the future development of the plant and of the production of the electrical industry in general are also discussed. The book is the seventh issued in the series "Iz istorii mashinostroyeniya na Urale" (History of Machine-building in the Urals) which will contain a total of ten books. No personalities are mentioned. There are no references.

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AVAILABLE: Library of Congress

JJP/ksv
8-5-58

Card 3/3

FISHLER, Ya.L.

Conference on the Developmental Problems of the SOV105-58-7-21/32
 Production of Transformers in the USSR, 5-6 Mar 1958, Moscow
 (Elektrichestvo, 1958, No. 7, pp. 82-83)

and voltage and about the shortcomings in the assembling which are due to the manufacturers. S.A. Gorodetskiy (Glavelektromontazh MS RSFSR) spoke about the abolition of the revision of the removable part of the autotransformers at the assembling site, and about several constructive changes in power transformers and about the measures necessary for a mass connection of the transformers without drying. A. M. Sarkisyan (Glavsel'elektro MSKh SSSR) spoke about the electrification on the open country and the demand of open country districts on the electrical industry. K.A. Yegikyan (Armelelektrozavod) reported on new transformer constructions. Ya.L. Fishler (chief of the construction office in the works "Ural-elektroapparat") also reported on transformer constructions. The conference found serious shortcomings in the organisation of scientific research work and a lack of engineers and designers.

1. Transformers--Development
2. Transformers--Production
3. Conference

Card 3/3

SOV/110-59-7-6/19

AUTHOR: Fishler, Ya.L., Engineer

TITLE: Transformer Manufacture at the "Uralelektroapparat Works
(Transformatorostroyeniye na zavode "Uralelektroapparat")

PERIODICAL: Vestnik Elektropromyshlennosti, 1959, Nr 7, pp 27-31 (USSR)

ABSTRACT: The "Uralelektroapparat" works produces power transformers in ratings from 50 to 60 000 kVA, mainly for supplying mercury-arc rectifiers. The works has developed a series of transformers type TMRU rated from 420 to 12 800 kVA for supplying mercury-arc rectifiers having d.c. output from 500 to 10 000 A at 230 to 3300 V. Double-star secondary windings are used and usually some of the transformers in a sub-station have star-connected primaries and some delta. Equalising reactors are installed in the transformer tanks. The transformers of this series have been fully tested on short-circuit; the test circuits are described. A new series of rectifier transformers is being developed, employing cold-rolled steel for higher efficiency and economy in material. Information is given about a number of advantages that transformers of the new series are expected to have. A transformer of the new series is illustrated in Fig 1. A few of them have been built but

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SOV/110-59-7-6/19

Transformer Manufacture at the "Uralslektroapparat" Works

the rate of introduction will depend on the availability of cold-rolled steel. A considerable number of transformers are being supplied for railway electrification. In addition to the widely-used rectifier transformers type TMRU-6200/35 for a d.c. output of 1000 A at 3300 V, the works has developed and is delivering transformers type TMR-11000/10 for supplying bridge-connected pairs of mercury-arc rectifiers with outputs of 2 x 1125 A at 3300 V. As transformer type TMR-11000/10 is of high efficiency the increased losses in the bridge circuit rectifiers are fully compensated. On-load voltage control of railway electrification transformers offers numerous advantages and accordingly the works have developed transformers type TMRN-15000/10 by means of which the rectified voltage can be controlled over the range 3600 - 4000 V with primary voltage variations of +5 and -10%. Considerable economy will result from using 110 kV transformers in traction substations instead of using double transformation. Transformers type TMR-11000/110 have been developed for supplying bridge-connected pairs of rectifiers with outputs of 2 x 1 125A at 3300 V. Transformers of 110 kV

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SOV/110-59-7-6/19

Transformer Manufacture at the "Uralelektroapparat" Works

with on-load voltage control are also being developed. Rectifier transformers type TMRU-16000/10 for d.c. outputs of 3000 A at 3300 V, have been developed to supply circuits with two rectifiers in series per phase. A series of transformers exemplified in Fig 2 is for tropical service. They are in ratings from 100 to 2000 kVA and are filled with non-inflammable fluid. Being fireproof, they can be installed indoors in industrial premises alongside the equipment to be supplied. Special series transformers have been developed for the self-excitation circuits of large alternators and synchronous capacitors. The primary winding is connected in series with the stator winding of the alternator and the secondary current is used for excitation. In this way additional excitation can be provided under short-circuit conditions. Dry-type transformers developed for rectifier excitation of the 30 and 50 MW hydro-alternators of the Stalingrad station are illustrated in Fig 3. A number of special transformers have been designed for various large industrial drives. Dry transformers for rectified currents of 1200, 1800 and 3600 A have been developed

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SOV/110-59-7-6/19

Transformer Manufacture at the "Uralelektroapparat" Works

for forming mercury-arc rectifiers. These transformers, illustrated in Fig 4, are of very compact construction and use air-blast ventilation. Special sectionalised limiting reactors for currents up to 200 kA have been developed for high-voltage test equipment in short-circuit testing laboratories. Such a reactor is illustrated in Fig 5. The 7-year plan provides for doubling the production of transformers and extending the range of types. There are 5 figures.

Card 4/4

FISHIER, Ya.L., inzh.

Low power 110 kv. electric transformers, Vest. elektroprom.
32 no.12:11-15 D '61. (MIRA 14:12)
(Electric transformers)

GUREVICH, Solomon, Osipovich; FISHMAN, Abram Aronovich; CHAPSKIY, O.U.,
redaktor; MOJALISOVA, N.G., tekhnicheskii redaktor

[Oil economy of machine-tractor stations and state farms] Hefte-
khozisistvo MTS i sovkhozov. Moskva, Gos. izd-vo sel'khoz. lit-ry,
1956. 109 p. (MLRA 10:2)

(Machine-tractor stations)

(State farms) (Petroleum products--Storage)

KRICHMAR, Matvey Semenovich; ~~VISHMAN~~, A.I., inzhener, retsentsent; OKHREMEYKO, N.S., kandidat s.-kh. nauk, redaktor; PRITYKINA, L.A., redaktor; KISINA, Ye.I., tekhnicheskiiy redaktor.

[Losses in the processing of wine by-products and ways of preventing them] Poteri pri pererabotke pobochnykh produktov vinogradnogo vine-
deliia i bor'ba s nimi. Moskva, Pishchepromizdat, 1955. 98 p.
(Wine and wine making) (MIRA 9:5)